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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
07/16/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No.	Applicant(s)	
	10/796,305	FINKELSHTAIN ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/13/08*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-117* is/are pending in the application.

4a) Of the above claim(s) *41-92 and 102-117* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40 and 93-101* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/13/08 has been entered.

This office action is responsive to the amendment filed in conjunction with the foregoing RCE. The applicant has overcome all of the 35 USC 103 rejections based upon Ricks et al'599. Refer to the preceding amendment for specific details on applicant's rebuttal arguments. However, all pending claims are again rejected over the same art as well as new grounds of rejection as composed infra and for the reasons of record:

Election/Restrictions

1. Claims 41-92 and 102-117 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention/species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 04/12/07.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-15, 17-19 and 29-35 are rejected under 35 U.S.C. 102(e) as being **clearly** anticipated by Finkelshtain et al 2003/0099876.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claims 1 and 3-4:

Finkelshtain et al **clearly** anticipate the following claims:

Finkelshtain et al disclose a fuel cell (TITLE/ABSTRACT) that consists of an electrolyte chamber 12 that is bounded on either side of a cathode 14, and an anode 16 and that contains an electrolyte. Atmospheric oxygen reaches cathode 14. On the other side of an anode 16 from electrolyte chamber 12 is a fuel chamber 18 that contains a fuel solution (P0027). Liquid fuel such as methanol or a solution of $NaBH_4$ is used (P0016, 0025, 0028) and a liquid solution of KOH is used as the electrolyte (P0028). *The liquid-tight sealing is an inherent characteristics of the fuel cell which uses liquid substances for operations.*

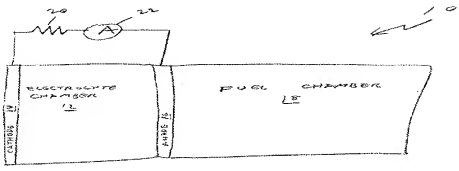


FIG. 1

As to claim 2:

Finkelshtain et al is not connected or attached to a fuel delivery system (See FIGURE 1).

As to claims 5-6:

Liquid fuel such as methanol or other alcohols such as butanol, propanol, ethanol, penthanol, hexanol and the likes are used (P0016-0017, 0025, 0038). Liquid fuel such as a solution of $NaBH_4$ is used (P0016, 0025, 0028, 0037/CLAIMS 6 and 8).

6. The fuel composition of claim 5, wherein said first fuel is selected from the group consisting of $LiAlH_4$, $NaBH_4$, $LiBH_4$, $(CH_3)_3NHBH_3$, $NaAlH_4$, $NaCNBH_3$, CaH_2, LiH, NaH, KH, $Na_2S_2O_3$, Na_2HPO_3, Na_2LIPO_2, $K_2S_2O_3$, K_2HPO_3, K_2HPO_2, NaCOOH and KCOOH.

7. The fuel composition of claim 1, wherein said first fuel is a hydride.

8. The fuel composition of claim 7, wherein said first fuel is selected from the group consisting of $LiAlH_4$, $NaBH_4$, $LiBH_4$, $(CH_3)_3NHBH_3$, $NaAlH_4$, $NaCNBH_3$, CaH_2, LiH, NaH and KH.

As to claim 7:

A liquid solution of KOH is used as the electrolyte (P0028).

As to claim 8:

Atmospheric oxygen reaches cathode 14 (P0027). *Thus, it is an air-breathing cathode.*

As to claim 9:

A catalytic anode using Pt/Ru alloys catalytically oxidizes the fuel (P0004, 0010-0011).

As to claim 10:

No membrane is included in Finkelshtain et al's fuel cell (See FIGURE 1/P0027).

As to claims 11-14 and 17-18:

Volume of the fuel chamber 18 is 15 cm^3 (or 15 ml) (P0027). Volume of the electrolyte chamber 12 is 2 cm^3 (or 2 ml) (P0027). The sum of the above volumes is about 17 cm^3 (or 17 ml). Thus, it is within the claimed range.

As to claims 15 and 29:

It is apparent from **Figure 1** that the shape of the fuel cell is rectangular (See FIGURE 1). Cathode and anode surfaces also are parallel to each other (See FIGURE 1).

As to claims 19:

Area of each electrode is 4 cm^2 (P0027).

As to claims 30-35:

A fuel cell comprising multiple fuel cell units (i.e. a stack of fuel cells) necessarily includes more than one liquid fuel chamber, liquid electrolyte chamber and anodes and cathodes.

As a result, the present claims are anticipated.

4. (*at least*) Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being **clearly** anticipated by Thellamann 3365334.

Thellamann illustrates in **Figure 2** below a fuel cell having a liquid-tight seal (COL 1, lines 26-28) comprising electrodes 16, 19, and electrolyte chamber 23, a housing 10 and a fuel chamber 17 and an inlet pipe 21 permitting access of air into the cathode (COL 2, lines 17-62). The electrolyte is a liquid electrolyte using an aqueous solution of KOH (COL 1, lines 17-18). *The structure of the fuel cell of Thellamann is the same fuel cell structure as instantly claimed. Note: although Thellamann discloses the use of gaseous fuel, it is to be noted that if a liquid fuel is supplied into fuel chamber 17, said chamber is configured to or capable of retaining the liquid fuel as instantly claimed. Notice that the requirement of the present claims is "configured to retain liquid fuel".*

FIG.1

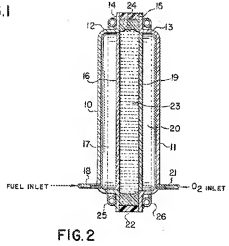


FIG.2

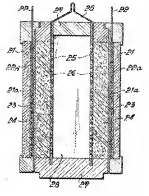
As a result, the present claims are anticipated.

5. (*at least*) Claims 1, 5 and 7 are rejected under 35 U.S.C. 102(b) as being **clearly** anticipated by Vielstich et al 3365333.

As to claim 1:

Vielstich et al illustrate in **Figure 5** below a fuel cell comprising oxygen electrodes 21, fuel electrodes 24, a fuel/electrolyte chamber 26 and a multipart holder 27 for holding the fuel cell (COL 4, lines 22-55). Vielstich et al use a liquid fuel and a liquid electrolyte (COL 1, lines 15-30/EXAMPLES 1-4). A solution of KOH is the electrolyte (EXAMPLES 1 and 3). Methanol is the fuel (EXAMPLE 4).

FIG. 5



Note: The structure of the fuel cell of Vielstich et al is the same fuel cell structure as instantly claimed when taking the two oxygen electrodes 21 and the two fuel electrodes 24 as one oxygen electrode and one fuel electrode as a whole, respectively. The specific first chamber position is met when combining one electrode on the right side with one on the left side; similarly, the specific second chamber is met when combining the one electrode on the right side with the other electrode on the left side. Therefore, it meets the specific structural orientation claimed by the applicant. Additionally, there is no requirement that first and second chambers are two separate and different chambers and/or fully dedicated to either fuel or an electrolyte. Thus, fuel/electrolyte chamber 26 meets the functional requirement of being configured to retain liquid fuel and liquid electrolyte as instantly claimed.

As to claims 5 and 7:

A solution of KOH is the electrolyte (EXAMPLES 1 and 3). Methanol is the fuel (EXAMPLE 4).

As a result, the present claims are anticipated.

6. (*at least*) Claims 1, 5, 7, 39 and 93 are rejected under 35 U.S.C. 102(b) as being **clearly** anticipated by Shimizu et al 4562123.

As to claims 1, 39 and 93:

Shimizu et al illustrate in **Figure 1** below a fuel cell comprising an air electrode 21, a methanol electrodes 23, an ion exchange membrane 22 and a methanol tank 27 (See FIGURE 1/COL 8, lines 52-65) satisfying the structural orientation claimed by the applicant. **Figure 5** illustrates the fuel cell container as a whole (FIGURE 5). An electrolyte containing an aqueous solution of KOH and liquid fuel such as methanol are used (COL 1, lines 40-50/COL 4, line 1 & lines 28-30/COL 5, line 65/COL 6, lines 6-15/Col 7, line10-12/COL 7, line 68 to COL 8, line 2).

FIG. 1

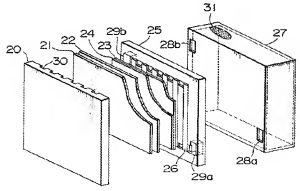


FIG. 2

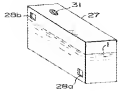
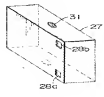


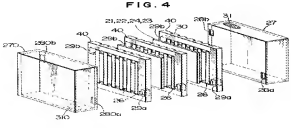
FIG. 3



Reference numerals 28a, 28b and 29a, 29b represent holes allowing the flow of methanol into the fuel chamber and gas produced at the electrode out of the fuel chamber (COL 9, lines 35-44). Reference numeral 31 is a vent port (COL 10, lines 27-35).

Figure 4 is a fuel cell configuration with dual methanol tanks 27. *Thus, it contains a plurality of holes 28a, 28b, 280a, 280b and 29a, 29b, 290a, 290b and vents 31, 310.*

FIG. 4



Shimizu et al mention in multiple times the use of a liquid electrolyte (COL 1, lines 40-50/Col 6, lines 6-15/Col 7, line10-12/COL 7, line 68 to COL 8, line 2). *Note: it fully expectable that when a liquid electrolyte is employed, the structure containing the liquid electrolyte has the same structure/configuration as the tank 27 containing the liquid fuel. Thus, Shimizu et al enable the skilled artisan to employ an electrolyte chamber for holding a liquid electrolyte.*

As to claims 5 and 7:

An electrolyte containing an aqueous solution of KOH and liquid fuel such as methanol are used (COL 1, lines 40-50/COL 4, line 1 & lines 28-30/COL 5, line 65/COL 6, lines 6-15/COL 7, line10-12).

As a result, the present claims are anticipated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 24-28 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Thellamann 3365334; and/or b) Vielstich et al 3365333; and/or c) Shimizu et al 4562123 as applied to claim 1 above, and further in view of Lawrence et al 2002/0197522.

Thellamann, and/or Vielstich et al and/or Shimizu et al are all applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference fails to disclose the specific ports and openings.

As to claims 24-28 and 36:

Figure 8 of Lawrence et al shows a replaceable fuel cartridge 39a which includes a cartridge port or exit port 88a which cooperates with a device port 127 to form a two-way valve shut-off valve 128, as shown in FIGS. 12(a) and 12(b). Two-way valve 128 is a spring-loaded device in which exit port 88a and includes a spring 129 that biases a valve member 130 toward a sealed position such that cartridge 39a is fluidly sealed when the cartridge is removed from the fuel cell assembly 31a but is open when the cartridge is inserted into the fuel cell assembly. Similarly, device port 127 of valve 128 includes a spring 134 that biases a valve member 135 toward a sealed position such that the fuel delivery system 40a of fuel cell assembly 31a is sealed when cartridge 39a is removed from the fuel cell assembly 31 a but is open when the cartridge is inserted into the fuel cell assembly. Lawrence et al teach a sealable port in communication with the fuel cell (abstract).

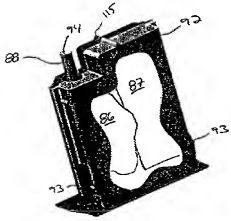


FIG. 7

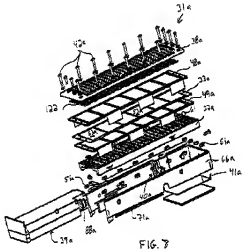


FIG. 3

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific ports and openings of Lawrence et al in the fuel cell of Thellamann, and/or Vielstich et al and/or Shimizu et al, when having ports incorporated into their fuel cell structure, as Lawrence et al disclose their invention allows easy and convenient replenishment of fuel cell reactants without using additional equipment and by providing a sealable port in communication therewith to improve safety and fluid distribution.

11. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Thellamann 3365334; and/or b) Vielstich et al 3365333; and/or c) Shimizu et al 4562123 as applied to claim 1 above.

Thellamann, and/or Vielstich et al and/or Shimizu et al are all applied, argued and incorporated herein for the reasons discussed above. Nonetheless, the preceding references fail to disclose the specific outer dimensions or does not expressly disclose the specific rectangular shape (*assuming arguendo that the representation of Figure 1 is inaccurate*).

Thellamann discloses and illustrates a shaped fuel cell housing with certain dimensions (COL 2, lines 17-20/ FIGURE 2).

Vielstich et al discloses and illustrates a shaped fuel cell arrangement comprising an enclosing holder with certain dimensions (COL 4, lines 22-55/ FIGURE 5).

Shimizu et al discloses and illustrates a shaped arrangement of fuel cell units with certain dimensions (FIGURES 1 & 2).

Thus, all of the above fuel cell systems disclosed by the preceding references have outer dimensions but it is unknown or undisclosed.

On this subject, where the only difference between the prior art and the claims is a recitation of relative dimensions *changes in size/proportion* of the claimed feature and a feature having the claimed relative dimensions would not perform differently than the prior art device, element, or member, the claimed device/element/member is not patentably distinct from the prior art device, element, or member. That is, limitations relating to the size of the feature/element/member are not sufficient to patentably distinguish over the prior art as it is noted that changes in size is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular size of the claimed outer dimension is significant. In re Rose 105 USPQ 237; In re Rinehart 189 USPQ 143; In Gardner v. TEC Systems, Inc., 220 USPQ 777 & 225 USPQ 232, **(See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale)**

With respect to the rectangular shape, it is noted changes in shape is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed fuel cell casing is significant. In re Dailey, 149

USPQ 47. It is also noted that aesthetic design changes having no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. In re Seid , 73 USPQ 431.**(See MPEP 2144.04 [R-1] Legal Precedent as Source of Supporting Rationale)**

12. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over : a) Thellamann 3365334; and/or b) Vielstich et al 3365333; and/or c) Shimizu et al 4562123 as applied to claim 1 above, and further in view of Finelli 3880809.

Thellamann, and/or Vielstich et al and/or Shimizu et al are all applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference fails to disclose the specific plastic casing.

Finelli discloses a fuel cell container having resistance to hydrocarbon materials formed of a polyurethane (COL 2, lines 7-10/ ABSTRACT/TITLE).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific plastic casing of Finelli in the fuel cell of Thellamann, and/or Vielstich et al and/or Shimizu et al as Finelli teaches that his specific plastic casing (polyurethane container) has an excellent resistance to hydrocarbon materials, excellent abrasion resistance, oil resistance, tensile strength and made essentially free of any tendency to become brittle; and it can also withstand normal impact forces while being used or transported.

13. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Thellamann 3365334; and/or b) Vielstich et al 3365333; and/or c) Shimizu et al 4562123 as applied to claim 1 above, and further in view of Delfino et al 3288644.

Thellamann, and/or Vielstich et al and/or Shimizu et al are all applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference fails to disclose the specific metal casing.

Delfino et al disclose a fuel cell module casing providing a liquid-tight seal made of metal (CLAIM 1/COL 4, line 16) such as Ni because it withstands the corrosive influence of the electrolyte (high resistance to corrosion) and its availability (COL 4, line 63-67).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific metal casing of Delfino et al in the fuel cell of Thellamann, and/or Vielstich et al and/or Shimizu et al as Delfino et al teach that metal casings made of Ni are desirable because such a metal withstands the corrosive influence of the electrolyte (high resistance to corrosion) and its availability (COL 4, line 63-67).

14. Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Thellamann 3365334; and/or b) Vielstich et al 3365333; and/or c) Shimizu et al 4562123 as applied to claim 1 above, and further in view of Reiser 2003/0207162.

Thellamann, and/or Vielstich et al and/or Shimizu et al are all applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference fails to disclose the specific ancillary power supply device.

Reiser discloses a battery boosted fuel cell (TITLE) wherein the fuel cell has an auxiliary power source (ABSTRACT) such as a supercapacitor (P0006).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific ancillary power supply device of Reiser in the fuel cell of Thellamann, and/or Vielstich et al and/or Shimizu et al as Reiser teach his specific ancillary power supply device (i.e. supercapacitor) assists the fuel cell in providing additional energy when necessary. Thus, the performance of the fuel cell is enhanced.

15. Claims 39-40 and 93-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thellmann 3365334 in view of Lawrence et al 2002/0197522.

As to claim 39 and 93:

Thellamann illustrates in **Figure 2** below a fuel cell having a liquid-tight seal (COL 1, lines 26-28) comprising electrodes 16, 19, and electrolyte chamber 23, a housing 10 and a fuel chamber 17 and an inlet pipe 21 permitting access of air into the cathode (COL 2, lines 17-62). The electrolyte is a liquid electrolyte using an aqueous solution of KOH (COL 1, lines 17-18). *The structure of the fuel cell of Thellamann is the same fuel cell structure as instantly claimed. Note: although Thellamann discloses the use of gaseous fuel, it is to be noted that if a liquid fuel is supplied into fuel chamber 17, said chamber is configured to or capable of retaining the liquid fuel as instantly claimed. Notice that the requirement of the present claims is "configured to retain liquid fuel".*

FIG.1

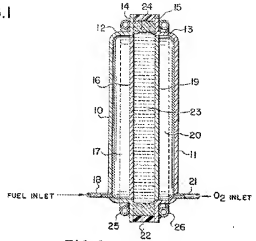


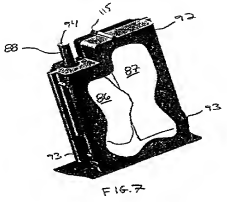
FIG.2

Thellamann disclose a fuel cell system as seen and described above. Nonetheless, the preceding prior art fails to disclose the sealable openings and the specific cartridge removably connected to the fuel cell.

As to claims 39-40, 93-95 and 98:

Figure 8 of Lawrence et al shows a replaceable fuel cartridge 39a which includes a cartridge port or exit port 88a which cooperates with a device port 127 to form a two-way valve shut-off valve 128, as shown in FIGS. 12(a) and 12(b). Two-way valve 128 is a spring-loaded device in which exit port 88a and includes a spring 129 that biases a valve member 130 toward a sealed position such that cartridge 39a is fluidly sealed when the cartridge is removed from the fuel cell assembly 31a but is open when the cartridge is inserted into the fuel cell assembly. Similarly, device port 127 of valve 128 includes a spring 134 that biases a valve member 135 toward a sealed position such that the fuel delivery system 40a of fuel cell assembly 31a is sealed when cartridge 39a is removed from the fuel cell assembly 31 a but is open when the

cartridge is inserted into the fuel cell assembly. Lawrence et al teach a sealable port in communication with the fuel cell (abstract).



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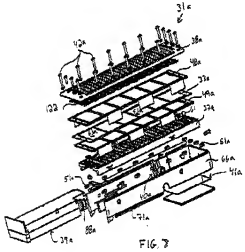


F16.8

As to claims 96-97:

The combination of all of the ports, springs, valve members, sealed portion and the cartridge itself can be said to provide the necessary arrangement to reduce turbulence (See FIGURES 7-8). It is also noted that certain degree of permeability is exhibited through septum 94 (P0077).

As to claims 99-100:

Fuel delivery system including seal-sealing membrane septum 94 prevents leakage (P0077). *It is noted that this seal-sealing membrane may act as absorbent material as well.*

As to claim 101:

A locking or engaging mechanism is described including a pair of springs 93 (P0074); and fuel delivery system and the fuel cell itself (P0077/FIGURE 7-8).

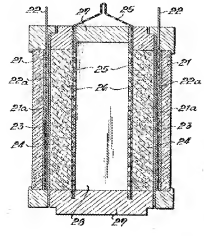
In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific cartridge removable connected to the fuel cell and its sealable openings Lawrence et al in the fuel cell of Thellamann as Lawrence et al disclose their invention allows easy and convenient replenishment of fuel cell reactants without using additional equipment and by providing a sealable port in communication therewith to improve safety and fluid distribution.

16. Claims 39-40 and 93-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vielstich et al 3365333 in view of Lawrence et al 2002/0197522.

As to claim 39 and 93:

Vielstich et al illustrate in **Figure 5** below a fuel cell comprising oxygen electrodes 21, fuel electrodes 24, a fuel/electrolyte chamber 26 and a multipart holder 27 for holding the fuel cell (COL 4, lines 22-55). Vielstich et al use a liquid fuel and a liquid electrolyte (COL 1, lines 15-30/EXAMPLES 1-4). A solution of KOH is the electrolyte (EXAMPLES 1 and 3). Methanol is the fuel (EXAMPLE 4).

FIG. 5



Note: The structure of the fuel cell of Vielstich et al is the same fuel cell structure as instantly claimed when taking the two oxygen electrodes 21 and the two fuel electrodes 24 as one oxygen electrode and one fuel electrode as a whole, respectively. The specific first chamber position is met when combining one electrode on the right side with one on the left side; similarly, the specific second chamber is met when combining the one electrode on the right side with the other electrode on the left side. Therefore, it meets the specific structural orientation claimed by the applicant. Additionally, there is no requirement that first and second chambers are two separate and different chambers and/or fully dedicated to either fuel or an electrolyte. Thus, fuel/electrolyte chamber 26 meets the functional requirement of being configured to retain liquid fuel and liquid electrolyte as instantly claimed.

A solution of KOH is the electrolyte (EXAMPLES 1 and 3). Methanol is the fuel (EXAMPLE 4).

Finkelshtain et al disclose a fuel cell system as seen and described above. Nonetheless, the preceding prior art fails to disclose the sealable openings and the specific cartridge removably connected to the fuel cell.

As to claims 39-40, 93-95 and 98:

Figure 8 of Lawrence et al shows a replaceable fuel cartridge 39a which includes a cartridge port or exit port 88a which cooperates with a device port 127 to form a two-way valve shut-off valve 128, as shown in FIGS. 12(a) and 12(b). Two-way valve 128 is a spring-loaded device in which exit port 88a and includes a spring 129 that biases a valve member 130 toward a sealed position such that cartridge 39a is fluidly sealed when the cartridge is removed from the fuel cell assembly 31a but is open when the cartridge is inserted into the fuel cell assembly. Similarly, device port 127 of valve 128 includes a spring 134 that biases a valve member 135 toward a sealed position such that the fuel delivery system 40a of fuel cell assembly 31a is sealed when cartridge 39a is removed from the fuel cell assembly 31 a but is open when the cartridge is inserted into the fuel cell assembly. Lawrence et al teach a sealable port in communication with the fuel cell (abstract).

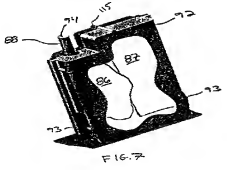


FIG. 7

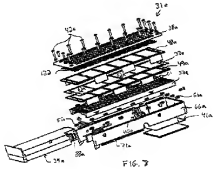


FIG. 8

As to claims 96-97:

The combination of all of the ports, springs, valve members, sealed portion and the cartridge itself can be said to provide the necessary arrangement to reduce turbulence (See FIGURES 7-8). It is also noted that certain degree of permeability is exhibited through septum 94 (P0077).

As to claims 99-100:

Fuel delivery system including seal-sealing membrane septum 94 prevents leakage (P0077). *It is noted that this seal-sealing membrane may act as absorbent material as well.*

As to claim 101:

A locking or engaging mechanism is described including a pair of springs 93 (P0074); and fuel delivery system and the fuel cell itself (P0077/FIGURE 7-8).

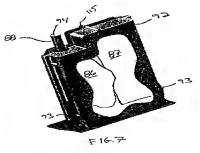
In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific cartridge removable connected to the fuel cell and its sealable openings Lawrence et al in the fuel cell of Vielstich et al as Lawrence et al disclose their invention allows easy and convenient replenishment of fuel cell reactants without using additional equipment and by providing a sealable port in communication therewith to improve safety and fluid distribution.

17. Claims 40 and 94-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al 4562123 as applied to claim 39 and 93 above, and further in view of Lawrence et al 2002/0197522.

Shimizu et al disclose a fuel cell system as seen and described above. Nonetheless, the preceding prior art fails to disclose the sealable openings and the specific cartridge removably connected to the fuel cell.

As to claims 39-40, 93-95 and 98:

Figure 8 of Lawrence et al shows a replaceable fuel cartridge 39a which includes a cartridge port or exit port 88a which cooperates with a device port 127 to form a two-way valve shut-off valve 128, as shown in FIGS. 12(a) and 12(b). Two-way valve 128 is a spring-loaded device in which exit port 88a and includes a spring 129 that biases a valve member 130 toward a sealed position such that cartridge 39a is fluidly sealed when the cartridge is removed from the fuel cell assembly 31a but is open when the cartridge is inserted into the fuel cell assembly. Similarly, device port 127 of valve 128 includes a spring 134 that biases a valve member 135 toward a sealed position such that the fuel delivery system 40a of fuel cell assembly 31a is sealed when cartridge 39a is removed from the fuel cell assembly 31 a but is open when the cartridge is inserted into the fuel cell assembly. Lawrence et al teach a sealable port in communication with the fuel cell (abstract).



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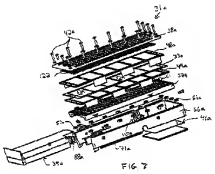

FIG 7

As to claims 96-97:

The combination of all of the ports, springs, valve members, sealed portion and the cartridge itself can be said to provide the necessary arrangement to reduce turbulence (See FIGURES 7-8). It is also noted that certain degree of permeability is exhibited through septum 94 (P0077).

As to claims 99-100:

Fuel delivery system including seal-sealing membrane septum 94 prevents leakage (P0077). *It is noted that this seal-sealing membrane may act as absorbent material as well.*

As to claim 101:

A locking or engaging mechanism is described including a pair of springs 93 (P0074); and fuel delivery system and the fuel cell itself (P0077/FIGURE 7-8).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific cartridge removable connected to the fuel cell and its scalable openings Lawrence et al in the fuel cell of Shimizu et al as Lawrence et al disclose their invention allows easy and convenient replenishment of fuel cell reactants without using additional equipment and by providing a sealable port in communication therewith to improve safety and fluid distribution.

Response to Arguments

18. Applicant's arguments including the declaration under rule 1.131, see papers filed in connection with the RCE of 06/13/08, with respect to the rejections based upon Ricks et al'599 under Section 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Lawrence et al'522.

19. Turning now to the remaining prior art that still stands under statutes 102 and/or 103: Applicant's arguments filed 06/13/08 have been fully considered but they are not persuasive. The gist of applicant's arguments gravitates around the contention that the foregoing prior art "*fails to disclose or suggest a refillable fuel cell wherein the fuel cell is configured to at least one of receive fresh liquid and discharge spent liquid via at least one resealable opening*".

In reply, it is instructive to note that the terms "refillable" and "resealable" can be considered relative term which are neither defined by the claim nor by the specification. Thus, the standard for ascertaining the requisite degree of being "refilled" or "resealed" is unknown and uncertain. Additionally, both terms merely express the ability of refilling and resealing, respectively, and do not encompass limitations recited in a positive manner to absolutely differentiate the claimed invention from the prior art of record. If the preceding explanation is still unsatisfactory for the applicant, it is further advanced that the fuel cells of Finkelshtain'876, Thellamann'334, Vielstich et al'333 and Shimizu et al'123 all can be considered, to certain extent, to be "refillable" because there is a continuous flow of reactants moving into the reacting zone (anode and/or cathode), and the continuous displacement of such reactants from one site to another site within the fuel cell per se satisfies the requirement of continuously refilling at least a

portion or area inside the fuel cell. Yet further, all prior art fuel cells can also be considered to be "reasealable" because there is provided a fluid distribution system (including valve members, pressure regulators, flow controllers) allowing to feed reactant into and out of the fuel cell during different operational modes; and the specific function of such a flow distribution system is in fact to control the flow of reactant by continuously opening or closing (resealable) those valve members, pressure regulators, and/or flow controllers to increase, reduce or stop reactant flow.

20. This response applies to all primary cited references (i.e. Finkelshtain et al; Thellamann; Vielstich et al; and Shimizu et al): the main contention of applicant's arguments is premised on the assertion that the art of record does not describe "*the fuel cell configured to at least one of receive fresh liquid and discharge spent liquid via at least one sealable opening*". In reply, it is first contended that the term "*sealable*" does not impart a positive limitation to the present claims, that is to say, it merely requires that the ports/openings, and/or ANY other fuel cell aperture or hole have the ability to be sealed. In this respect, it is apparent from reading the disclosure of the cited references, that ALL of the disclosed fuel cells are necessarily SEALED at least during normal operation, otherwise fuel leakage will occur leading to cause detrimental damages to either the fuel cell system or the fuel cell process. Furthermore, since the by-product of the fuel cell chemical process DOES include WATER, it is to be noted that liquid discharge is spent or exhausted from the fuel cell directly or indirectly through either an exhaust port and/or any other suitable opening appropriate for discharging exhaust therefrom. Since water is produced in and exhausted from the fuel cell, all of the cited references fully satisfy the claimed requirement of being configured to at least discharge spent liquid as instantly claimed. Notice that the spent liquid has not been materially or compositionally defined to the extent of clearly

distinguishing over the water discharged from the prior art references. As to Shimizu et al, the extent of the language "*being normally closed*" is uncertain, undefined and/or unknown so as to give it patentable weight to define over the teachings of Shimizu et al. Nonetheless, Shimizu et al uses scalable holes or points of contact for supplying fuel or allowing the flow of methanol; and it can be said that they are "normally closed" to avoid leakage of the fuel.

21. This response to applicant's argument applies to the Thellmann reference: applicant has argued that the foregoing reference does not show "*a cathode exposed to the atmosphere*". The examiner largely disagrees. It is useful to note Thellmann's teaching about supplying either oxygen and/or AIR (See COL 1, lines 15-18). From this disclosure, the examiner further advances that since air is supplied into the cathode section/chamber of the fuel cell, that cathode section/chamber is indirectly exposed to the atmosphere through the air coming directly from the atmosphere. Thus, the air distribution configuration of Thellmann appropriately reads on applicant's invention as instantly claimed.

The foregoing Examiner's contention is based upon the assumption that applicant is intending to define the term "*atmosphere*" as the standard atmosphere (the outside air). However, a broader reasonable interpretation of the term "*atmosphere*" does not require the inclusion of air of the locality (the outside air = standard atmosphere). Suffice it to say the term "*atmosphere*" also encompasses the surrounding environment or immediate space enveloping or enclosing an element (not necessarily air from the atmosphere). From this perspective, Thellmann definitely and unequivocally teaches the cathode being exposed to the surrounding environment or immediate space enclosing it. The present claims DO NOT HELP to differentiate one "*atmosphere- outside air*" from the other "*atmosphere-immediate surrounding environment or*

space" as postulated above by the Examiner. These definitions of the term "*atmosphere*" has been taken from Merriam-Webster's Collegiate Dictionary (10th Edition).

22. With respect to applicant's arguments that Shimizu et al does not disclose a cartridge and its respective liquid transfer port, applicant is respectfully directed to Figures 1-3 which show a methanol tank 27 (construed as the cartridge) and holes 28a, 28b, 29a and 29b (ports) allowing the flow of methanol into the fuel chamber and gas produced at the electrode out of the fuel chamber (COL 9, lines 35-44). Additionally, there is provided a vent port (COL 10, lines 27-35). Therefore, the Shimizu reference reads on the claimed invention, and still satisfies applicant's requirement of including a cartridge and ports. It is well to recognize that the invention in question does not set forth a particular structural or spatial arrangement for these features. Therefore, in view of the lack of a clear structure for the cartridge and the transfer port, it is strenuously contended that any fuel cell including a fuel container or fuel holding device (i.e. cartridge) with inlets and/or outlets for feeding or receiving reactant exhibits substantially the same structure of applicant's invention, and indeed such a fuel cell would be able to perform exactly the same undefined function currently intended by the fuel cell system of the applicant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/
Primary Examiner, Art Unit 1795